

ABSTRACT OF THE DISCLOSURE

A detector with a transistor sensitive to electromagnetic energy. In accordance
5 with the present teachings, the transistor is biased such that the output thereof is
responsive to the electromagnetic energy. The inventive imager includes an array
of the novel detectors. Each of the detectors being an n-channel metal-oxide
semiconductor transistor with a floating body. The transistors are biased for selective
activation and sequential readout. The transistor outputs are read by a differential
10 current sense amplifier. A color filter is disclosed to provide a color sense capability.
As an alternative, a grating is provided for this purpose. The present invention allows
a very dense imager to be built on using conventional silicon on sapphire or silicon on
insulator complementary metal-oxide semiconductor processes. The use of standard
CMOS processes allows for low manufacturing costs.

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